

**WHAT IS CLAIMED IS:**

1. A multi-foil optic comprising:  
a plurality of flat plates each having a reflecting surface, and positioned  
normal to an arc to provide total external reflection to high energy radiation  
5 incident on the plates from a high energy radiation source, to focus the incident  
high energy radiation on a designated surface, wherein each plate has a thickness  
in the range of 50-70  $\mu\text{m}$ .
2. The multi-foil optic of claim 1, wherein the high energy radiation  
10 comprises X-ray radiation.
3. The multi-foil optic of claim 1, wherein the high energy radiation  
comprises extreme ultraviolet (EUV) radiation.
4. The multi-foil optic of claim 1, wherein the plates are made of  
glass.
- 15 5. The multi-foil optic of claim 1, wherein the plates are made of  
mica.
6. A method for performing high energy radiation lithography,  
comprising the steps of:  
receiving high energy radiation from a high energy radiation source;  
20 focusing the high energy radiation from the high energy radiation source  
using a multi-foil optic;  
receiving the focused high energy radiation from the multi-foil optic onto  
a lithographic specimen via a lithographic mask.

7. The method of claim 6, wherein the high energy radiation comprises X-ray radiation.

8. The method of claim 6, wherein the high energy radiation comprises extreme ultraviolet (EUV) radiation.

5

9. A high energy lithographic system, comprising:  
a high energy source;  
a multi-foil optic for focusing high energy radiation from the high energy source; and

10 a mask, which receives focused high energy radiation from the multi-foil optic and selectively blocks some of the radiation to form a pattern on a specimen that is exposed to high energy radiation passing through said mask.

10. The high energy lithographic system of claim 9, wherein the high energy radiation comprises X-ray radiation.

15 11. The high energy lithographic system of claim 9, wherein the high energy radiation comprises extreme ultraviolet (EUV) radiation.